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A SINGLE DESCRIPTIVE OBSERVATIONAL CROSS-SECTIONAL STUDY OF CLINICO-EPIDEMIOLOGICAL CHARACTERISTICS OF FACIAL MELANOSES IN A TERTIARY CARE CENTRE

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ABSTRACT

Introduction: Facial melanosis is a feature of various underlying conditions and often presents a diagnostic problem. The cosmetic disfigurement causes psychological impact.

Aims: 1.To study clinico-epidemiological characteristics of facial melanoses

2. To correlate dermoscopic and histopathological features

Methods: 100 patients of facial hyperpigmentation were enrolled over 1 year. Detailed history taking, complete clinical examination and dermoscopic evaluation of the lesions was done.

Results: Female patients between 31 to 40 years of age predominated the study. Melasma was commonest etiology (45%), followed by LPP (22%), PIH (12%). Sparing of follicles (66%) and accentuated reticular pattern (17%) were the most consistent features on dermoscopy of melasma. Dermoscopy of LPP showed grey coloured pigment in a granular pattern, while dermoscopy of PIH showed blotchy brown pigment with perifollicular accentuation.

Conclusion: It is beneficial to have a correlation between the clinical, dermoscopic and histopathological findings in a case of facial melanosis.

KEYWORDS : Facial melanoses, pigmentation, melasma, dermoscopy

Introduction :

Facial melanosis is a clinical feature of varied pathological conditions. It is a common presentation in Indian patients and often presents a complex diagnostic problem. The resulting cosmetic disfigurement causes considerable psychological impact due to its visibility (1). The skin of colour, as in majority of the Indians, has a higher tendency towards pigmentation following any kind of insult (sun exposure, use of cosmetics, trauma, inflammatory conditions etc. Several factors like quantity and type of melanin pigment, thickness of the stratum corneum, the dermal vasculature and the occasional presence of endogenous or exogenous pigments determine the normal skin colour. Facial melanosis comprises of some well defined conditions like melasma, Riehl's melanosis, Lichen planus pigmentosus, erythema dyschromicum perstans (EDP), and poikiloderma of Civatte. But owing to considerable overlap in the clinical features and etiopathogenetic factors it is difficult to always define the underlying condition. There is lack of clinical or laboratory guidelines for diagnosis of facial melanoses. The etiology in most cases of facial melanosis are difficult to pin-point, owing to the interplay of numerous factors, each of which may be contributory, e.g. Sun exposure, genetic predisposition, use of drugs, use of skin lightening creams, friction, etc (2). The treatment of facial melanoses is challenging and includes combination of multiple modalities: vigorous photo-protection, topical depigmenting agents and physical modes of treatment. Physical therapy comprises of chemical peels, use of lasers, and dermabrasion (3). The pigmentation can be effectively treated only when there is an understanding of underlying etiopathogenesis and an accurate diagnosis.

Aims and objectives

1. To study the clinico-epidemiological characteristics of facial melanoses
2. To study the dermoscopic and histopathological features of the disease

Materials and methods:

This was a cross-sectional, single-centered observational descriptive study. After obtaining approval from the institutional ethics committee, 100 Patients with facial hyperpigmentation attending dermatology OPD in a tertiary care centre were enrolled in the study over a duration of one year. Patients between the age group 10 to 60 years coming to the OPD with facial hyperpigmentation as the presenting complaint were included in the study. Patients with concomitant systemic diseases were excluded from the study. Detailed history taking and complete clinical examination of patients was performed. Each patient was subjected to in-depth history of onset, duration and progress of the pigmentation, aggravatoing factors, daily sunexposure, atopy, repeated friction and use of cosmetics. We recorded the details of facial pigmentation like the sites involved, colour, pattern, sparing of some areas,etc. It included examination of other sites like the neck, trunk, extremities, flexures, mucosal sites, and taking appropriate clinical photographs after taking consent from the patient. This was followed by dermoscopic evaluation of the lesions. Punch biopsy was taken from representative lesion wherever required to establish the diagnosis.

Results :

The incidence of facial melanosis showed a female preponderance, with a female: male ratio of 1.85 : 1. Patients in the study ranged from 14 to 63 years of age with the mean age of presentation being 37.06 years. Majority of the patients (31%) in the study belonged to fourth decade of life i.e. 31 to 40 years of age group. The most common diagnosis in the study was melasma (in 45 out of 100 patients, of which 9 were males and 36 were females); followed by lichen planus pigmentosus in 22 patients, postinflammatory pigmentation in 12 patients; frictional melanosis in 9 patient, acanthosis nigricans in 5 patients, periorbital melanosis in 4 and seborrheic melanosis, FDE and Becker's melanosis in 1 patient each. Majority of the patients (51%) had complaints with duration less than 1 year, followed by 27% who had disease duration between 1 to 3 years and 22% patients had disease duration of more than 3 years. Average duration before seeking medical attention was 2.53 years. Fitzpatrick's skin phototype V was observed in 59%, followed by phototype IV in 33%, photoype III in 8%. Patients' occupations being broadly classified as outdoor and indoor occupations; 55% patients had an outdoor job while 45% patients had an indoor job. Majority of the patients of melasma had a centrofacial pattern (57.7%), followed by malar pattern (37.7%). Only 2 patients (4.4%) had mandibular type of melasma. All the patterns occurred more commonly in females. 66.7% patients with melasma had an outdoor occupation which accounted for increased exposure to UV radiation on a daily basis. 31.1% patients had history of melasma in first degree relatives, 20% had onset of melasma during pregnancy or post –partum period, 13.3 % had used daily fairness creams or cosmetics, and 11.1% had exacerbation of pigmentation in summer. Under wood's lamp examination, the type of pigmentation could not be determined for 21 patients (46.7%). 11 patients (24.4%) had an epidermal melasma, 7 patients (15.55%) had dermal melasma and 6 patients (13.33%) had mixed type of melasma. On dermoscopy, most common pattern observed was accentuated reticular pattern (37.7%) followed by globular pattern (28.8%). Among 40% patients, light brown pigment was observed, followed by dark brown pigment in 31% patients. Sparing of follicles was seen in 66.6% of the patients. Additional features that were observed were light brown background in 20%, telangiectasias in 20%, and arcuate pattern in 8.8% patients. Of the 22 patients of lichen planus pigmentosus, 36.3% of the patients had associated photosensitivity. Co-existent lichen planus lesions were present in 1 patient (4.5%). On dermoscopy, it was observed that colour of pigment appeared grey in 50% and dark brown in 50% and was distributed either in granular clumps (27% patients), or granules and globules (in 18.1 %), or globules (in 4.5%). Pigment followed reticular pattern in 40.9%.

Among the 12 patients of post-inflammatory hyperpigmentation, it had occurred secondary to acne in 6 patients(50%), secondary to atopic dermatitis in 6 patients (16.6%), and 1 patient each of allergic contact dermatitis, fixed drug eruption, perioral dermatitis and tinea faciei. On dermoscopy of lesions of PIH, accentuated pseudonetwork was seen in 5 patients (41.6%), blotchy brown pigment was seen in 4 patients (33.3), perifollicular accentuation in 25%, honeycomb pattern in 2 patients (16.6%) and pigment involving the follicles was seen in 1 patient (8.3%).

Dermoscopy of frictional melanosis showed accentuated pseudo pattern in 33.3%, blotchy pattern in 22.2% and diffuse pattern in 22.2%. Pigment was grey-brown in 4 patients (44.4%) and grey in 3 patients (33.3%). Among the 5 patients of acanthosis nigricans, 3 patients (60%) showed the presence of linear crista cutis-gyri on dermoscopy, papillomatous surface and hyperpigmented dots were seen in 2 patients (40%)

Discussion:

This study was undertaken to understand the clinical features and epidemiology of facial melanosis in the Indian population and to classify the causes behind it. The incidence of facial melanosis showed a female preponderance, with a female: male ratio of 1.85: 1 in our study, and is in concordance with other similar studies. (4) This can be attributed to the fact that melasma which was the most common diagnosis in our study is known to have a female preponderance. Also females tend to consult doctors more often than males for aesthetic purposes. (5). Patients in the study ranged from 14 to 63 years of age with the mean age of presentation being 37.06 years. Majority of the patients (31%) in the study belonged to fourth decade of life i.e. 31 to 40 years age group; followed by 25% belonging to 41 to 50 years age group. This age reflects maximum job productivity and thus increased cosmetic concerns. Achar et al and Kavya et al recorded similar peaks in their studies. (4)(6). In the study by Arellano et al mean age was 40.2 ± 9.8 years ranging from 25 to 73 (7).

In our study the duration of pigmentation ranged from 10 days to 20 yrs. Patients sought treatment after an average of 2.53 years. Tomar et al reported 68% patients of pigmented contact dermatitis seeking treatment before one year (8). According to a study on melasma by Achar et al patients sought treatment after an average duration of 3.59 years (6).

The most common diagnosis in our study was melasma (45%). followed by lichen planus pigmentosus in 22%, postinflammatory pigmentation in 12%; frictional melanosis in 9% and acanthosis nigricans in 5%. In a study by Arellano et al in Mexican population, they found the most common cause of facial melanosis to be postinflammatory hyperpigmentation in 29% patients followed by melasma in 25% patients(7). Melasma was the commonest cause of facial melanosis (43%) in north Indian population in a study by Hasan et al. (9)

Classifying patients according to their skin types, 59% belonged to Fitzpatrick's skin type, followed by 33% of phototype IV, and 8% of phototypes III. In a study on melasma in Brazilian women skin ,again intermediate phototypes IV (38.4%) and III (34.4%) were commonly affected.(10)

MELASMA

Out of the total 45 patients of melasma in the study, 9 (25%) were males while 36 (75%) were females. (M: F = 1:4 ratio). In a study on melasma in Indian population, Sarkar et al found the incidence of melasma in men to be 25.83% (11). Hexsel reported a greater female predisposition (97.5%) in Brazilian patients in 2014 (12). Among the morphological types of melasma, centrofacial was the commonest (57.7%) followed by malar melasma (37.7%), in our study. Sarkar et al found that most common clinical patterns were malar in 61%, centrofacial in 29.3% and mandibular in 9.7% (13). A 2013 study conducted in Brazil on the epidemiological characteristics of facial melasma in Brazilian women identified the predominance of centrofacial melasma (51.7%), followed by mixed melasma in 43.4% patients (10). Intense sun exposure is believed to play an important role in development of melasma especially in dark-skinned individuals. In our study 66.7% patients had an outdoor job which involved prolonged sun exposure. Sarkar et al noted that 58.06% of their patients of melasma were outdoor workers(11). Tamega et al reported intense sun exposure as precipitating factor for melasma in 27% of their cases (10). Family history in first degree relatives has been considered as an important risk factor in the development of melasma in men and women (Table 1)

Predisposing/ aggravating factors for melasma (Table 1)

	Present study	Tamega et al (10)	Guinot et al (14)	Handel et al (15)
1.	Sun exposure 66.7%	Sun exposure 27%	Sun exposure 84%	Sunstroke 26%
2.	Intra- or post-partum 20%	Pregnancy 36.4%	Pregnancy 50%	Pregnancy 42%
3.	Fairness creams 13%			Stress 7%
4.	OC pills 6.6%	OC pills 16.3%	OC pills 38%	

Wood's lamp is used in melasma to determine the depth of pigment. Epidermal melasma shows accentuation under Wood's lamp, while dermal melasma does not. Mixed melasma shows areas of accentuation as well as no accentuation. However, it becomes difficult to interpret the results in darker phototypes. At such times, it is labelled as indeterminate melasma; it specially affects individuals of phototype V and VI. It is so named because the melanin in these patients is abundant and most of the light is absorbed by this pigment. Only a small amount returns to the eyes, and the skin appears dark as a whole (16) (Table 2)

Depth of melasma (Table 2)

	Present study	Kavya et al (4)	Thappa et al (17)	Sarkar et al (13)
Epidermal	24.4%	55%	2.9%	48%
Dermal	15.5%	22%	0	32%
Mixed	13.4%	17%	5.8%	19%
Indeterminate	46.7%	2%	91.3%	1%

Dermoscopy findings of melasma

Dermoscopy is a useful tool in visualisation of the surface and sub-surface changes of skin. Melasma is a common pigmentary condition in people of darker skin. Dermoscopy of melasma is useful in determining the depth of pigment which in turn predicts the response of pigmentation to treatment. The most common dermoscopic finding in melasma was sparing of follicles, seen in 66.6%. Accentuated reticular pattern was observed in 37.7%. Pigment globules were found in 28.8% followed by diffuse pigment in 17.7%and reticuloglobular pattern in 11.1%. (Table 3)

Dermoscopy findings in melasma (Table 3)

	Present study	Thappa et al (17)
Accentuated pseudo network	37.7%	100%
Globular pattern	28.8%	
Sparing follicles	66.6%	100%
Light brown background	20%	100%
Light brown pigment	40%	16.3%
Brown- grey pigment	17%	82.7%
Telangiectasias	20%	37%
Arcuate structures	8.8%	0

In our study we considered the brown pigment with accentuated pseudo- network as the epidermal type (figure 1), the dermal type in which there was dark brown or the grey pigment with loss of network regularity (Figure 2) and the presence of brown-grey pigment and diffuse or blotchy pattern as characteristics of mixed melasma (figure 3). (Table 4)

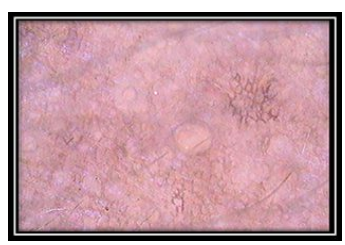

Figure 1 Epidermal melasma - Presence of brown pigment and accentuated reticular pattern on a light brown background

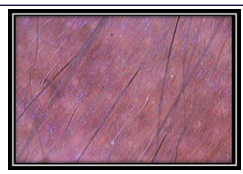

Figure 2 Dermal melasma showing presence of blotchy dark brown pigment with loss of network regularity

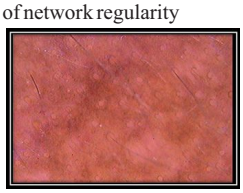

Figure 3 Brown-grey pigment and diffuse pattern in case of mixed melasma

Depth of melasma on Dermoscopy (Table 4)

Type of melasma on dermoscopy	Present study	Barcaui et al (16)
Epidermal	46.7%	40%
Dermal	15.6%	22.5%
Mixed	37.7%	37.5%

Literature describes dermoscopic changes of ochronosis as blue gray amorphous areas obliterating some follicular openings and dark brown globules and globular-like structures on a diffuse brown background (18). However, there were nil incidences of ochronosis in our study and hence we could not study this condition.

LICHEN PLANUS PIGMENTOSUS

Dermoscopy was done for the lesions of LPP and it was observed that the pigment was present in granular clumps in most of the patients (27.2%), as granules and globules in 18.1% and as globules in 4.5%. It followed a reticular pattern in 40.9% patients. Pigment distribution was not uniform and was blunted around the hair follicles and sweat gland openings (figure 4). The pigment clusters were limited by the skin surface markings. Similar findings were recorded by Haldar et al while studying LPP and erythema dyschromicum perstans. Dermoscopy of LPP helps to differentiate it from erythema dyschromicum perstans which shows the presence of uniform colour distribution, symmetry, and active red border. The macules are ill defined and rounded. (19)

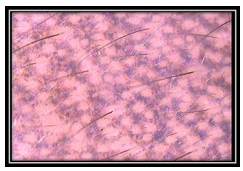

Figure 4 - Dark grey coloured pigment present uniformly in a reticular pattern in LPP

POST- INFLAMMATORY HYPERPIGMENTATOIN

Postinflammatory hyperpigmentation (PIH) is an acquired hypermelanosis occurring after cutaneous inflammation or injury. Causes of PIH are varied. Dermoscopic examination revealed accentuated pseudopattern in 41.6% patients, white irregular patches in 33.3%, blotchy brown pigment in 33.3% and perifollicular accentuation of pigment in 25%.

FRICTIONAL MELANOSIS

9 patients of frictional melanosis were recruited in our study. It has to be highlighted that all these patients were middle-aged males and had the habit of rubbing with a handkerchief for a long duration. On dermoscopy we observed an rippled network in 33.3% patients, of either brown or grey pigment, which was also recorded by Chuang et al. (20)

ACANTHOSIS NIGRICANS

5 patients of acanthosis nigricans were recruited in the study, of which 3 patients also had acanthosis nigricans over other sites as axillae, groins, nape of neck, knuckles, etc. Dermoscopy of these lesions revealed that 3 patients had linear crista cutis and sulci cutis, 2 patients had papillomatous surface and 2 had hyperpigmented dots (figure 5). In a case report by Uchida et al, aberrant skin structure, crista cutis and sulci cutis, and hyperpigmented dots have been described. (21)

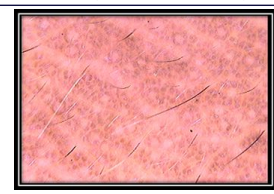

Figure 5 - Dermoscopy of acanthosis nigricans showing linear crista cutis and sulci cutis with hyperpigmented dots

HISTOPATHOLOGICAL EXAMINATION

In cases of clinical dilemma, biopsy was done in such patients to confirm the diagnosis histopathologically. Biopsy was done in few patients of melasma to rule out exogenous ochronosis. However none of the specimens showed presence of ochre coloured banana bodies. Lichen planus pigmentosus showed prominent interface dermatitis causing vacuolar degeneration of basal cell layer and pigment incontinence. Frictional melanosis showed prominent hyperkeratosis and acanthosis. Papillomatosis was a conspicuous finding during histopathological examination of acanthosis nigricans.

CONCLUSION

Facial hypermelanosis is a clinical feature of a diverse group of disorders most common in middle aged females, the most common of which are melasma, LPP, post-inflammatory hyperpigmentation and frictional melanosis. These disorders have variable but overlapping features. Dermoscopy can be useful in differentiating various conditions leading to facial melanosis. With a dermoscope, it is possible to determine the depth of pigment in conditions such as melasma. The study is a useful contribution to the clinicoepidemiologic literature on facial melanosis in Indian population. The study highlights the advantage of correlating the clinical, dermoscopic and histopathological findings while arrivng at an accurate diagnosis and further management.

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